[Continued on next page]

(54) Title: INTELLIGENT DATA STORAGE AND PROCESSING USING FPGA DEVICES
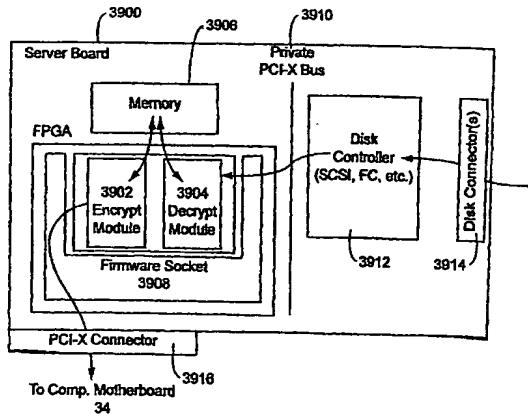
(57) Abstract: A data storage and retrieval device and method is disclosed. The device includes at least one magnetic storage medium configured to store target data and at least one re-configurable logic device comprising an FPGA coupled to the at least one magnetic storage medium and configured to read a continuous stream of target data therefrom, having been configured with a template or as otherwise desired to fit the type of search and data being searched. The re-configurable logic device is configured to receive at least one search inquiry in the form of a data key and to determine a match between the data key and the target data as it is being read from the at least one magnetic storage medium. This device and method can perform a variety of searches on the target data including without limitation exact and approximate match searches, sequence match searches, image match searches and data reduction searches. This device and method may be provided as part of a stand-alone computer system, embodied in a network attached storage device, or can otherwise be provided as part of a computer LAN or WAN. In addition to performing search and data reduction operations, this device may also be used to perform a variety of other processing operations including encryption, decryption, compression, decompression, and combinations thereof.

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